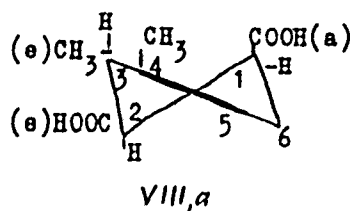
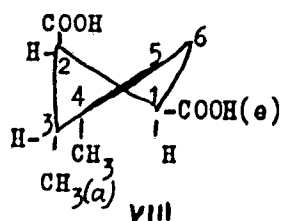


Investigations in the Field of Stereochemistry of Cyclic SOV/62-59-6-17/36
Compounds. Communication 25. The Condensation of Trans-
1,2-dimethylbutadiene With Maleic Anhydride. Synthesis and Configuration of
Four Isomers of the 3,4-dimethyl- Δ^4 -cyclohexane-1,2-dicarboxylic Acid



In the experimental part the different condensation- and isomerization processes are described in detail.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D.
Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: September 24, 1957

Card 4/4

5 (3)
AUTHORS:

Kucherov, V. P., Andreyev, V. M.,
Nazarov, I. N.

SOV/62-59-7-14/30

TITLE:

Investigation in the Field of the Stereochemistry of Cyclic Compounds (Issledovaniye v oblasti stereokhimii tsiklicheskikh soyedineniy). Communication 26. Synthesis and Configuration of Six Stereoisomers of the 3,4-Dimethylcyclohexane-1,2-dicarboxylic Acid (Soobshcheniye 26. Sintez i konfiguratsiya shesti stereoizomerov 3,4-dimetiltsiklogeksan-1,2-dikarbonovoy kisloty)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1244 - 1252 (USSR)

ABSTRACT:

In the present paper the spatial orientation of the catalytic hydration of the anhydrides of the cis-cis- and the cis-trans-3,4-dimethyl- Δ^4 -cyclohexene-1,2-dicarboxylic acid (I) and (XIX) used for the synthesis of the stereoisomeric 3,4-dimethylcyclohexane-1,2-dicarboxylic acid is investigated. In the case of the derivatives of the cis-cis-trans-series (I), (II), and (V) the hydration proceeded with respect to space, the hydrogen was affiliated to the side opposed to that screened by carboxyl

Card 1/3

Investigation in the Field of the Stereochemistry SOV/62-59-7-14/38
of Cyclic Compounds. Communication 26. Synthesis and
Configuration of Six Stereoisomers of the 3,4-Dimethylcyclohexane-1,2-
dicarboxylic Acid

groups. This led to the corresponding derivatives of the cis-cis-cis-3,4-dimethylcyclohexane-1,2-dicarboxylic acid. The cis-trans-anhydride is in contrast to the cis-cis-anhydride (I) not hydrated with respect to space, since the screening effect of the carboxyl group is less distinctly marked in the latter. It produces therefore both possible stereoisomers, the cis-trans-trans- and the cis-trans-cis-anhydrides (XX) and (XV). Furthermore, 6 stereoisomers (of 8 possible) of the 3,4-dimethylcyclohexane-1,2-dicarboxylic acid (III), (X), (XIII), (XVI), (XX), and (XXIII) were obtained by catalytic hydration on sodium methylate and thermal transformation. The configurations and structures of these stereoisomers were proved by the internal transformations and the consideration of the model of the molecule. There are 4 Soviet references.

Card 2/3

Investigation in the Field of the Stereochemistry SOV/62-59-7-14/38
of Cyclic Compounds. Communication 26. Synthesis and
Configuration of Six Stereoisomers of the 3,4-Dimethylcyclohexane-1,2-
dicarboxylic Acid

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Compounds imeni N. D. Zelinskiy
of the Academy of Sciences, USSR)

SUBMITTED: September 24, 1957

Card 3/3-

5.(3)

AUTHORS:

Kucherov, V. F., Bogal', G. M.,
Nazarcv, I. N.

SOV/62-53-7-15/30

TITLE:

Investigation in the Field of the Stereochemistry of Cyclo Compounds (Issledovaniye v oblasti stereokhimii tsiklicheskih soyedineniy). Communication 29. Stereochemistry of the Oxidation of the Sin-cis- Δ^4 -octalino-1,2-dicyclohexanecarboxylic Acid by Means of Peracetic Acid (Sobshcheniye 29. Stereokhimiya okisleniya sin-tsais- Δ^4 -oktalin-1,2-dikarbonovoy kisloty pri pomoshchi peruksusnoy kisloty)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1253 - 1261 (USSR)

ABSTRACT:

In the present paper the oxidation in the presence of peracetic acid is investigated. The compound (I) mentioned in the title for which the catalytic hydration proves to be stereospecific serves as an example. It was found that the reaction is not stereospecific in this case but leads to the formation of α - and β -oxide mixtures (II) and (III). They are produced in rather equal quantities and could be separated by means of fractionated crystallization. Some stereospecific reactions

Card 1/3

Investigation in the Field of the Stereochemistry of SOV/62-59-7-15/38
Cyclic Compounds. Communication 29. Stereochemistry
of the Oxidation of the *Sin-cis*- Δ^4 -pentalene-1,2-dicyclohexanecarboxylic Acid by
Means of Peracetic Acid

were investigated by means of which the accordance to a certain rule of the transformations of these isomeric oxide rings could be detected in order to confirm the configuration of the two isomers. The transformations were confirmed in the case of the models of the molecule. It is furthermore shown that the α -oxide (II) is capable of a slight trans-diaxial opening of the oxide ring at the C-O-bond in the case of C₁₀, under formation of 4-oxy- β -lactonic acid (IV). The β -oxide is much more stable, compared with this reaction. The ring is opened at the C₄-carbon atom in a similar reaction under formation of the same configuration at this carbon atom. Then the reaction of β -oxide and (XXVI) is investigated with hydrochloric acid and it is found that the latter leads to the formation of trans-chlorohydrin (XVI) and (XIX) which leads again to the lactonization into the corresponding 4-chloro- β -lactonic acid of the trans-decalin series the configuration of which corresponds to that

Card 2/3

Investigation in the Field of the Stereochemistry of SOV/62-59-7-15/38
Cyclic Compounds. Communication 29. Stereochemistry of
the Oxidation of the Sin-cis- Δ^4 -octaline-1,2-dicyclohexanecarboxylic Acid by
Means of Peracetic Acid

of the 4-oxy- γ -lactonic acid. The formation schemes of the compounds and their representation with respect to space are given. The individual transformation- and synthesis reactions are described in detail in the experimental part. There are 7 references, 4 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: October 16, 1957

Card 3/3

5 (3)

AUTHORS:

Kucherov, V. F., Andreyev, V. M.,
Nazarov, I. M.

SOV/62-52-7-16/38

TITLE:

Investigation in the Field of the Stereochemistry of Cyclic Compounds (Issledovaniye v oblasti stereokhimii tsiklicheskikh soedineniy). Communication 30. Synthesis of the Cis-cis-trans- and Trans-cis-trans-3,4-dimethylcyclohexane-1,2-dicarboxylic Acids (Sintez Tsis-tsis-trans- i trans-tsis-trans-3,4-dimetiltsiklogoksan-1,2-dikarbonovykh kislot)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1262 - 1269 (USSR)

ABSTRACT:

In a previous paper (Ref 1) the authors could not obtain the stereoisomeric compounds (I) and (II) mentioned in the title by the method used by them. Their synthesis succeeded later by means of a series of new stereospecific transformations. These stereospecific transformations are investigated in the present paper by means of peracetic acid. The stereochemical oxidation of the anhydride of the cis-cis-3,4-dimethyl- Δ^1 -octaline-1,2-dicarboxylic acid (III) served as an example. It could be

Card 1/3

Investigation in the Field of the Stereochemistry of SOV/62-59-7-16/38
Cyclic Compounds. Communication 30. Synthesis of the
Cis-cis-trans- and Trans-cis-trans-3,4-dimethylcyclohexane-1,2-dicarboxylic
Acids

proved that this reaction proceeds in both spatial directions possible with the formation of the isomeric α - and β -oxides (IV) and (V). The configuration of (IV) and (V) was proved by a series of chemical transformations. Furthermore, the authors succeeded in producing the required substance (I) the configuration of which was proved by the transformation of its diester (XVI) into the earlier described trans-trans-trans-acid (XVII), by the reduction of the 5-keto- γ -lactonic acid (XII) according to Klemmensen. The trans-cis-trans configuration (II) which was also required was obtained by the investigation of the partial saponification of the cis-trans-cis-diester (XXI) and the isomerization of the mixture of the corresponding semiesters (XXII and XXIII). Thus, the 8 possible stereoisomers of the 3,4-dimethylcyclohexane-1,2-dicarboxylic acid were obtained the configuration and transformation of which correspond to the general conceptions of conformation analysis. The transformation schemes are given. The syntheses and transformations are described in the experimental part.

Card 2/3

Investigation in the Field of the Stereochemistry of SOV/62-59-7-16/33
Cyclic Compounds. Communication 30. Synthesis of the
Cis-cis-trans- and Trans-cis-trans-3,4-dimethylcyclohexane-1,2-dicarboxylic
Acids

There are 6 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy
of the Academy of Sciences, USSR)

SUBMITTED: October 16, 1957

Card 3/3

5(3)

AUTHORS:

Smit, V. A., Kuchеров, V. F. (Moscow)

SOV/74-28-3-4/6

TITLE:

Cyclization Reactions of Isoprenoid Compounds (Reaktsii tsiklizatsii izoprenoidnykh soyedineniy)

PERIODICAL:

Uspekhi khimii, 1959, Vol 28, Nr 3, pp 272-311 (USSR)

ABSTRACT:

In the present paper the attempt is made to systematize the abundant material on the cyclization of isoprenoid compounds. The present paper covers all publications issued until the middle of 1958 in the field of transformations of acyclic compounds into cyclic ones in the series of the mono-, hexa-, di- and triterpenes. Furthermore the cyclization of 1,5-diene systems of the non-isoprenoid type as well as the data available on mechanism and stereochemistry of the cyclization of isoprenoids were discussed more thoroughly. It can be seen from the material available that there are three kinds of cyclization of isoprenoid systems (Ref 1): A -cyclization, where compounds of the ionone series are formed; B -cyclization, where p-menthane derivatives are formed and C -cyclization, where compounds of the allo-cyclo-geraniol series are formed. The direction of the reaction proceeding mainly depends on the nature of the compound and also on the kind of the bonds

Card 1/4

Cyclization Reactions of Isoprenoid Compounds

SOV/74-28-3-4/6

which take part in the reaction. Further, cyclizations of several monoterpenes are discussed the transformations of which were investigated in all three possible directions; in this class the cyclization of ketones (pseudoionone and its analogues) are best investigated because of their accessibility. The cyclization according to A is especially characteristic and essential of the ketones where ionone and its analogues are formed. Whereas the p-menthane cyclization is unusual for ketones and was discovered quite recently only, this kind of cyclization is more characteristic of monoterpene aldehydes than the ionone cyclization and the only one possible for aldehydes similar to citronellal. The ionone cyclization is less characteristic of isoprenoid alcohols than of aldehydes. The cyclization of isoprenoid acids can proceed in all 3 directions and was very thoroughly investigated. The cyclization of alicyclic terpene-hydrocarbons has been known for a long time already (Refs 153,154). Later, (Refs 155,156) it was proved that this reaction has a general character. In consequence of this reaction a hydrogen carbon mixture is formed which contains a considerable amount of B and α -isomers with an impurity of γ -isomers (Refs 157,158). This reaction

Card 2/4

Cyclization Reactions of Isoprenoid Compounds

SOV/74-28-3-4/6

proceeds prevalently according to the ionone scheme which distinguishes it from cases previously investigated. The formation of bi- and polycyclic systems from alicyclic terpenes proceeds so readily as the formation of monocyclic systems in the monoterpene series. The analysis of the products formed is, however, made difficult because of the formation of a large number of possible stereoisomers. It is comparatively easy to determine in the cyclization products the ratio of the isomers according to the positions of the double bond. Far more difficult is the separation of individual steric isomers from the mixture of stereoisomeric α , β - and allo-products and the determination of their structure. For this reason individual stereoisomers were separated only in a few cases until recently. The affinity of the carbon skeleton of the steroids with cyclic triterpenes and the resemblance of their steric structures have raised the interest of the scientists for some time already and suggested a common way of their biosynthesis in nature. The fact that these compounds, at least partly, can be constructed from elementary carbon groups of isoprene, allowed to seek a connection with acyclic isoprenoids for which such a structure of the molecules is common. Still in 1926 the assumption was expressed (Refs 198,242) that

Card 3/4

Cyclization Reactions of Isoprenoid Compounds

SOV/74-28-3-4/6

squalene might be a genetic precursor of cholesterol and over this also of other steroid compounds. The correctness of this hypothesis was confirmed experimentally only quite recently. The theoretical consideration of this problem induced Ružička and collaborators (Refs 11, 12) to establish a biogenetic formula for isoprenoids. Deriving from some well founded pre-suppositions for the cyclization mechanism of squalene it became possible on the basis of this formula to explain the formation of all known triptenes from squalene. Ružička's interpretations of the ways and cyclization mechanism of squalene into polycyclic systems have, however, not yet been confirmed, but there is a number of experimental data which verify their correctness. The number of papers dealing with the investigation of the mechanism and the steric orientation of the cyclization becomes larger and larger. Further investigations in this field will doubtlessly lead to an experimental foundation of the biogenetic formula of the isoprenoids. The knowledge of the conditions and the mechanism of the cyclization of isoprenoid systems will extend the synthetic possibilities and will facilitate numerous natural compounds. There are 3 tables and 282 references, 27 of which are Soviet.

Card 4/4

5 (3)
AUTHORS:

SOV/79-29-3-12/61
Kucherov, V. F., Grigor'yeva, N. Ya., Nazarov, I. N. (Deceased)

TITLE:

Investigation in the Field of the Stereochemistry of the Cyclic Compounds (Issledovaniye v oblasti stereokhimii tsikli-cheskikh soedineniy). XXVIII. Condensation of 1-Acetoxybutadiene With Citraconic Anhydride and Stereospecific Trans-formations of the Forming Isomeric Adducts (XXVIII. Kondensatsiya 1-atsetoksibutadiyena s tsitrakonovym angidridom i stereospetsificheskiye prevrashcheniya obrazuyushchikhaya izomernykh adduktov)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 793-803 (USSR)

ABSTRACT:

The authors investigated the condensation of 1-acetoxybutadiene with the citraconic anhydride, which is important in the problems concerning the structural direction of diene synthesis and in the stereochemistry of the adducts. In this connection it was shown that owing to the unsymmetrical character of the two reacting components a mixture forms with a certain ease, consisting of about equal amounts of two possible ortho- and meta-adducts (I) and (II), which pass over to the isomeric acids (III) and (IV) by saponification with water (Scheme 1). Both isomeric adducts have a cis-cis con-

Card 1/2

SOV/79-29-3-12/61

Investigation in the Field of the Stereochemistry of the Cyclic Compounds.
XXVIII. Condensation of 1-Acetoxybutadiene With Citraconic Anhydride and
Stereospecific Transformations of the Forming Isomeric Adducts

figuration. The formation of a preponderant large quantity of metaisomer on the condensation of 1-acetoxybutadiene with citraconic anhydride shows at the same time that the electrostatic influence of the acetoxy group upon the structural direction of the diene synthesis is more marked than the influence exerted by the factors of spatial arrangement, which depend on the volume of the substituents. Both the structure and configuration of the isomeric ortho- and meta-adducts were thus proven by cleavage and lactonization reactions. There are 6 references, 5 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR
(Institute of Organic Chemistry of the Academy of Sciences, USSR)

SUBMITTED: January 21, 1958

Card 2/2

307/79-29-3-13/61

5 (3)
AUTHORS:

Kucherov, V. F., Segal', G. M., Nazarov, I. N. (Ducanod)

TITLE:

Investigation in the Field of Stereochemistry of the Cyclic Compounds (Issledovaniye v oblasti stereochemii tsiklicheskikh soedineniy). XXXI. Stereochemistry of the Oxidation of the Anti-cis- Δ^4 -octalin-1,2-dicarboxylic Acid (XXXI. Stereochemiya okisleniya anti-tsis- Δ^4 -oktalin-1,2-dikarbonovoy kisloty)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, PP 804-809 (USSR)

ABSTRACT:

The authors showed earlier that the oxidation of the isomeric syn- and anti- Δ^4 -octalin-1-carboxylic acids by peracetic acid takes place spatial-selectively on the side opposite to the carboxyl groups and that it leads to the α -oxides (I) and (II) only. The anhydride of syn-cis- Δ^4 -octalin-1,2-dicarboxylic acid, on the other hand, does not oxidize selectively with respect to space and yields a mixture from the isomeric oxides (III) and (IV) (Scheme 1) (Refs 1-3). In the present paper the authors investigate the stereochemistry of the oxidation of the isomeric anti-cis- Δ^4 -octalin-1,2-dicarboxylic acid and its derivatives with peracetic acid, as well as the cis-hydroxylation reactions of both isomeric syn-cis- and anti-cis-anhydrides. The oxidation of the an-

Card 1/3

SOV/73-29-3-13/61

Investigation in the Field of Stereochemistry of the Cyclic Compounds.
XXXI. Stereochemistry of the Oxidation of the Anti-cis- Δ^4 -octalin-1,2-dicarboxylic Acid

hydride of anti-cis- Δ^4 -octalin-1,2-dicarboxylic acid (V) with peracetic acid proceeds, unlike the isomeric syn-cis-anhydride, selectively with respect to space and leads to α -oxide (VI). In boiling with water, (VI) passes over to lactonic acid (VII). The fact that the acid (VII) does not yield any keto- γ -lactonic acid with oxidation, but is subject to a deep cleavage, proves that (VII) contains a tertiary carboxyl group. Also the oxidation of anti-cis- Δ^4 -octalin-1,2-dicarboxylic acid (VIII) proceeds in the same way, in which connection a mixture forms from the corresponding α -oxide (IX) and oxy- γ -lactonic acid (VII). In the same way takes place the cis-hydroxylation of anti-cis-anhydride (V) with osmium anhydride on the side opposite to the carboxyl groups. The cis-glycol (XIX) separated in this connection contains an axial hydroxyl group at C₁₀, which leads to a slight dehydration and to the compound (XV). In conclusion, the investigation covered the oxidation of anti-cis- Δ^4 -octalin-1,2-dicarboxylic acid (VIII), of its anhydride (V) and diester (XI) with peracetic acid, in which connection the

Card 2/3

30V/79-29-3-13/61

Investigation in the Field of Stereochemistry of the Cyclic Compounds.
XXXI. Stereochemistry of the Oxidation of the Anti-cis- Δ^4 -octalin-1,2-dicarboxylic Acid

corresponding α -oxides (IX), (VI) and (XII) were obtained, the configuration of which was proven by stereospecific transformations. It further covered the cis-hydroxylation of syn-cis- and anti-cis-anhydride (XX) and (V). The isomeric cis-glycols (XIX) and (XXII) obtained in this connection were used for the stereospecific synthesis of the isomeric 4-keto decalin-1,2-dicarboxylic acids. There are 8 Soviet references.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR
(Institute of Organic Chemistry of the Academy of Sciences, USSR)

SUBMITTED: January 21, 1958

Card 3/3

• SOV/20-124-5-33/62

5(3)
AUTHORS:

Smit, V. A., Semenovskiy, A. V.,
Medvedeva, V. M., Kucherov, V. P.

TITLE:

On the Cyclization Character of the Pseudo-ionon (O kharaktere
tsiklizatsii psevdionona). A New Method of Producing the
 α -Ionon (Novyy metod polucheniya α -ionona)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, PP 1080-1082
(USSR)

ABSTRACT:

As has been proved in numerous publications (Refs 1-8), the
pseudo-ionon is converted to a mixture of α - and β -ionon under
the action of various acids. The ratio between the resulting α -
and β -isomers depends on the nature of the cyclizing agent. For
 β -ionon concentrated sulphuric acid in ether or in acetic acid
is the specific cyclizing agent whereas this role is played for
 α -ionon by 60 % sulphuric or phosphoric acid, preferably by
boron trifluoride. The statements made in publications seem to
indicate that the α -isomer forms the original reaction product
almost in all cases independently of the nature of the agent
(Refs 9-13) and can be converted to the stabler conjugated
system of the β -isomer under the action of acid agents. Thus,
the specific activity of various cyclizing agent is restricted

Card 1/3

On the Cyclization Character of the Pseudo-ionon.
A New Method of Producing the α -Ionon

SCV/20-124-5-33/62

to their greater or smaller ability of isomerizing the initially formed α -isomer. In order to give experimental proof of this assumption the authors have studied the cyclization of the pseudo ionon by 100 % H_2SO_4 between +60° and -60°C. Nitromethane or nitropropane were used as solvents. The distillate obtained in a vacuum was analyzed with the aid of its ultraviolet spectrum (obtained with the assistance of T. M. Fadeyeva) (Table 2). It is apparent from the results (Table 1) that the ratio between the α - and β -ionons formed is entirely determined by the cyclization conditions, namely the residence time, temperature, and the amount of H_2SO_4 . This shows clearly that the primary process in the cyclization of the pseudo-ionon is the formation of the α -ionon. Depending on the conditions of the reaction this is more or less converted by isomerization to form the β -ionon. Thus, the reactions whereby these isomers are formed are sequential rather than parallel reactions. The specific character of the cyclizing agent is restricted to the degree of its isomerizing activity. The method described in the article makes possible a convenient preparation of both ionons and may prove

Card 2/3

On the Cyclization Character of the Pseudo-ionon.
A New Method of Producing the α -Ionon

SOV/20-124-5-33/62

valuable in the production of α -ionon. There are 2 tables
and 15 references, 1 of which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy
of the Academy of Sciences, USSR)

PRESENTED: October 30, 1958, by B. A. Kazanskiy, Academician

SUBMITTED: October 24, 1959

Card 3/3

5 (2,3)

AUTHORS:

Shvetsov, N. I., Kucherov, V. F.

SOV/20-126-5-29/69

TITLE:

The Stereochemistry of Heterocyclic Compounds (Stereokhimiya geterotsiklicheskikh soyedineniy). Configuration of the Geometric Isomers of 1,2,5-Trimethyl-4 Phenyl Piperidole-4 (Konfiguratsiya geometricheskikh izomerov 1,2,5-trimetil-4-fenilpiperidolov-4)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1017 - 1020 (USSR)

ABSTRACT:

1,2,5 trimethyl piperidole-4 is a mixture of cis- and trans-isomers which is obtained by the condensation of propenyl-isopropenyl-ketone with methylamine (Ref 1). Of these isomers (I) and (II) the second - the trans isomer - is the more stable. A greater amount is also produced with alkaline isomerization, and it was isolated in the individual state. This has rendered possible the synthesis of all 4 geometrical isomers, as mentioned in the sub-title (III), (IV), (V) and (VI). Their propionates showed a pain-alleviating activity of various degrees (Ref 2). Their effect exceeds that of morphine by the 2-, 8-, 4- or 4-6-fold. In order to clarify the connection between the physiological activity and the spatial structure of this class of com-

Card 1/5

The Stereochemistry of Heterocyclic Compounds.
Configuration of the Geometric Isomers of 1,2,5-
Trimethyl-4 Phenyl Piperidols-4

SOV/20-126-5-29/69

pounds the authors studied the stereochemistry of isomeric phenyl-alcohols. Thus it has become possible to prove the existence of the configuration mentioned with respect to the first group of substances (Ref 1). In the reaction of the trans-piperidole (II) with phenyl-lithium a mixture is formed (4:1) of isomeric phenyl-alcohols (III) and (IV). They can only be distinguished from each other by the configuration at C_4 . It was found that the isomer (IV) is more easily degraded and that it is more difficult to transform it into an ester than (III). Thus, (IV) must contain an axial hydroxyl group at C_4 . Investigation of the molecular model shows that the alcohol (IV) is thermodynamically more advantageous with an equatorial position of the phenyl group. As a matter of fact the alcohol (III), isomeric to same, can easily be transformed into (IV) at the reactions which proceed in C_4 at a Walden reversal. (Ref 1).

All this is a convincing proof that the promelol alcohol (III) - with a trans-position of the methyl groups - contains a cis-

Card 2/5

The Stereochemistry of Heterocyclic Compounds.
Configuration of the Geometric Isomers of 1,2,5-
Trimethyl-4 Phenyl Piperidols-4

SOV/20-126-5-29/69

-position of the phenyl group at C_4 and of the methyl group at C_3 . The α -promedol alcohol is its isomer with a trans-position of these groups. Much more difficult, however, is the proof of the configuration of the isomers (V) and (VI). But in this case too a success has been achieved, and in particular in connection with the investigation of the products of the catalytical hydration of the 1,2,5 trimethyl-4-phenyl Δ^5 dehydro-piperidol-4 (VIII), obtained at an earlier stage (Ref 1). This unsaturated compound is very easily dehydrated. The proof hereof is the presence therein of an axial hydroxyl group at C_4 . (VIII) was oxydized to (IX). (IX) shows characteristic absorption bands corresponding to the existence of a C=O bond of the tertiary amide, and further also of the existence of a non-conjugate keto group and of an associated hydroxyl. The formation of this latter substance is only possible with the oxidation of the double bond, which is located at C_5 of the piperidine cycle. With the catalytical hydration of the (VIII) a mixture

Card 3/5

The Stereochemistry of Heterocyclic Compounds.
Configuration of the Geometric Isomers of 1,2,5-
Trimethyl-4 Phenyl Piperidols-4

SOV/20-126-5-29/69

of isomers is produced out of which - at a ratio of about 5:1 - the isomer (IV) and the new isomer, having a melting point of 102-103°, have been isolated, the latter isomer having proved to be identical with the isopromedol alcohol (V). This further proves, that the 3rd isomer (V) has a cis-position of the methyl groups, as well as a cis-position of the phenyl group at C₄, analogous to the (III), and finally a cis-position of the methyl group at C₅. It follows therefrom that the 4th isomer must have the only possible configuration with a cis-position of the methyl groups and a trans-position of the phenyl-group at C₄, as well as of methyl group at C₅. There are 4 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinakiy of the Academy of Sciences, USSR)

Card 4/5

5(3)

SOV/20-128-3-31/58

AUTHORS: Kucherov, V. F., Grigor'yeva, N. Ya.

TITLE: Laws of Double-bond Isomerization in Cyclohexadiene-1,2-dicarboxylic Acids

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 547-550 (USSR)

ABSTRACT: The displacements of double bonds in the acids mentioned in the title have been poorly investigated up to date. The authors have decided to undertake a systematic investigation of the character and the laws mentioned in the title in the

$\Delta^{1,4}$ -cyclohexadiene-1,2-dicarboxylic acids. For this purpose, they investigated the transformations of the homologs of dihydrophthalic acid with methyl groups in various positions on the ring. At first, they obtained the anhydride of 3-methyl-

$\Delta^{1,4}$ -cyclohexadiene-1,2-dicarboxylic acid (I) and its diester (II). It was found that in the saponification of this diester (II) a displacement of the double bond takes place from position Δ^1 into position Δ^6 . This yields the 3-methyl- $\Delta^{4,6}$ -cyclohexadiene-1,2-dicarboxylic acid (III). An alkaline saponification of the acid anhydride (I) also proceeds with the displacement of the double bond into the Δ^6 -position. In this case, however, more complicated rearrangements of the double bonds take place. Now, 3-methyl- $\Delta^{3,6}$ -cyclohexadiene-1,2-dicarboxylic acid (IV), with a system of nonconjugated double bonds, appears

Card 1/3

SOV/20-128-3-31/58

Laws of Double-bond Isomerization in Cyclohexadiene-1,2-dicarboxylic Acids

as the main product. It became evident that the system of isolated double bonds in the acid (IV) is rather stable, and suffers no noticeable changes by boiling with alkali. Under sufficiently hard saponification conditions, however, the non-conjugated $\Delta^{1,4}$ -grouping, which is stable in the acid-anhydride Δ^1 , is isomerized. Here, the double bond is displaced from the intercarboxylic position into the nonsubstituted position Δ^2 . At the same time, the Δ^4 -bond may be displaced into the Δ^3 -position. Its further isomerization into position Δ^2 is inhibited by the methyl group in position 3. This inhibitory effect was also confirmed by the example of 4-methyl- $\Delta^{1,4}$ -cyclohexadiene-1,2-dicarboxylic acid (V). The same law applies to 3,4-dimethyl- $\Delta^{1,4}$ -cyclohexadiene-1,2-dicarboxylic acid (IX). Also here, the second double bond, on which there is a methyl group standing, is not isomerized. The ultraviolet spectra recorded by T. M. Fadeyeva for all acids obtained by the authors, containing a conjugated system of double bonds and substituted in the same way, are in agreement with each other. The introduction of a new methyl group on the carbon atom of the conjugated system shifts the absorption maximum by about 10 m μ into the range of long waves (Ref 7) (See Table 1). The data of table 2 show that the absorption character is greatly

Card 2/3

SOV/20-128-3-31/58

Laws of Double-bond Isomerization in Cyclohexadiene-1,2-dicarboxylic Acids

changed by the introduction of a 2nd isolated double bond into the anhydride of Δ^1 -cyclohexene-1,2-dicarboxylic acid. Such an anomalous absorption suggests that in these acid anhydrides there seems to be an electronic interaction of two formally isolated double bonds for which a homoallyl conjugation (Ref 8) becomes possible due to the existence of a rigid system of the five-membered acid-anhydride ring. There are 1 figure, 2 tables, and 8 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

PRESENTED: June 2, 1959, by B. A. Kazanskiy, Academician

SUBMITTED: May 25, 1959

Card 3/3

PLATE 1 BOOK EXPLANATIONS 507/1583

Leningrad, Universitet

Voprosy teoreticheskoy organicheskoy khimii (Problems in the Theory of the Structure of Organic Compounds) [Leningrad] 1960. 279 p. Errata slip inserted. 3/75 copies printed.

Sponsoring Agency: Leningradskiy arkhiv Leningradskiy universitet im. A.I. Shubina.

Resp. Ed.: I.I. Frenskiy; M.: V.D. Piatov; Tech. Ed.: S.D. Yodlagina.

PREFACE: This collection of articles is intended for chemists and organic chemists.

CONTENTS: The collection is concerned with the scientific legacy of A.I. Frenskiy, and includes discussions of his theoretical views and their evolution in connection with the development of theoretical organic chemistry. The articles review problems on the structure, reactivity and transformations of various classes of organic compounds: unsaturated acyclic and cyclic hydrocarbons, saturated and unsaturated alcohols, glycols and carboxylic compounds. In parentheses are mentioned. References accompany each article.

REMARKS: I.I. Frenskiy, and I.I. Chuchanov, Development of A.I. Frenskiy's work in the field of Polyethylene Glycols 68

Yodlagina, S.D. Development of A.I. Frenskiy's ideas on the Synthesis of Terpenes and Related Compounds by the Soviet School of Chemists 126

Frenskiy, I.I., and V.D. Piatov. Role of A.I. Frenskiy's Research on the Synthesis of Isoprenoid Compounds 135

Frenskiy, I.I. Reaction Mechanisms of Alcohols and Glycols with Dehydrates 140

Yodlagina, S.D. Investigations in the Field of Substituted 2-Hydroxy-2, 3-dihydrofurans 163

Yodlagina, S.D. A.I. Frenskiy's Reaction in the Synthesis of Tertiary 1,2,3-Triols of the Acetylene Series 183

Yodlagina, S.D. Isomeric Transformations of Ketones 196

Yodlagina, S.D. Participation of Neighboring Groups in Chemical Processes. Chemical Transformations of α -Ketone Aldehydes 210

Yodlagina, S.D. Application of A.I. Frenskiy's Ideas and of the Chemical Reactions Discovered by Him in the Chemistry of the Natural Compounds 224

APPENDIX: Library of Congress (2476.112)

KUCHEVSKY, V.F.

KUASIL'NIKOVA, G.K., red.; KUGATOVA, G.P., red.; KUCHEROV, V.F.,
doktor khim. nauk, red.; LAUMYANSKAS, G., red.; PETRAUSKAS, V.,
red.; SELENOVSKIY, A.V., red.; VENGUTE, T., red.; PERAYAVICHYUS, A.,
tekhn. red.

[Chemistry of terpenes and terpenoids; papers presented at the
All-Union Conference on Problems in the Chemistry of Terpenes and
Terpenoids in Vilnius on June 4-6 1959] Trudy Vsesoiuznogo sove-
shchaniia po voprosam khimii terpenov i terpenoidov, Vil'nius, Gos.
izd-vo polit. i nauchn. lit-ry Litovskoi SSR, 1960. 247 p.

(MIRA 15:7)

1. Vsesoyuznoye soveshchaniye po voprosam khimii terpenov i ter-
penoidov, Vilnius, 1959. 2. Zavoduyushchiy sektorom Instituta khi-
mii i khimicheskoy tekhnologii Akademii nauk Litovskoy SSR (for
Kugatova).

(Terpenes) (Terpenoids)

30208

S/081/61/000/019/035/085
B110/B138

5.3400

AUTHORS: Kucherov, V. F., Yufit, S. S.

TITLE: Some reactions of carbon-chain growth

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 19, 1961, 151, abstract
19Zh71 (Sb. "Vopr. khimii terpenov i terpenoidov".
Vil'nyus, 1960, 197-200)

TEXT: Condensation of $\text{HC}(\text{OC}_2\text{H}_5)_3$ (I) with styrene in the presence of BF_3 etherate gives $\text{C}_6\text{H}_5\text{CH}(\text{OC}_2\text{H}_5)\text{CH}_2\text{CH}(\text{OC}_2\text{H}_5)_2$ (II) in a yield of 5 %.
Diketene (III) with I forms the enol ester $\text{CH}_3\text{COCH}_2\text{COOC}_2\text{H}_5$ (IV) in a yield of 50 %, which, together with $\text{CH}_3\text{CH}(\text{OC}_2\text{H}_5)_2$ (V) is converted to $\text{CH}_3\text{COCH}(\text{COOC}_2\text{H}_5)\text{CH}(\text{CH}_3)\text{OC}_2\text{H}_5$ (VI). VI is also formed by V with III and IV, or by IV and $\text{CH}_2=\text{CHOC}_2\text{H}_5$ in yields of 50, 80, and 10 %. V and $\text{CH}_3\text{CH}=\text{CHCH}(\text{OC}_2\text{H}_5)_2$ with BF_3 etherate dimerize to 1,1,3-triethoxy butane

Card 1/2

Some reactions of carbon-chain growth

30208
S/081/61/000/019/035/085
B110/B138

and $\text{CH}_3\text{CH}=\text{CHCH}(\text{OC}_2\text{H}_5)\text{CH}(\text{CHCH}_3\text{OC}_2\text{H}_5)\text{CH}(\text{OC}_2\text{H}_5)_2$ in yields of 50 and 80 %.
In acid media and during the synthesis of dinitro phenyl hydrazone, II and VI lose the ethoxy group and form derivatives of unsaturated compounds.
[Abstracter's note: Complete translation.]

X

Card 2/2

KUCHEROV, V.F.; SEREBRYAKOV, B.P.

Stereochemistry of cyclic compounds. Report No.23: Syn-cis
hydrindene-4,5-dicarboxylic acid and its stereospecific con-
versions. Izv.AN SSSR.Otd.khim.nauk no.6:1057-1065 J1 '60.
(MIRA 13:7)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo Akademii
nauk SSSR.

(Indancarboxylic acid) (Stereochemistry)

S/062/60/000/007/008/017/XX
B004/B064

AUTHORS: Rudenko, B. A., Yufit, S. S., Ivanova, L. N.,
and Kuchero, V. Z.

TITLE: The Application of Gas- and Liquid Chromatography to
Analyze Mixtures of Some Hydrocarbons

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
nauk, 1960, No. 7, pp. 1147 - 1152

TEXT: In the introduction the authors mention the difficulty of separating mixtures of ethylene- and diene hydrocarbons by means of fractional distillation. Such mixtures result, however, in the dehydrogenation of the hexene isomers. In this case, the authors applied the gas- and liquid chromatography. They describe the apparatus designed by them which proved to be valuable for substances with a boiling point of below 150°C. It consists of a U-shaped glass column with an inner diameter of 6 mm and a height of 1 m. This column is filled with kieselguhr. Silicone oil, vaseline oil, dibutyl phthalate

✓

Card 1/7

The Application of Gas- and Liquid
Chromatography to Analyze Mixtures of
Some Hydrocarbons

S/062/60/000/007/008/017/XX
B004/B064

or tricresyl phosphate were used as steady phase. The column is electrically heated. Hydrogen which is taken from a cylinder serves as carrier. The authors developed a new device (Fig 2) for evaporating and dosing the samples. The glass tube through which the hydrogen flows, contains two adjustable rods sealed with rubber. The ends of the rods are screwed into each other which allows exact dosing. Analysis is carried out by measuring the flame temperature of the sample evaporated in hydrogen by means of a thermocouple. Fig. 3 shows the burner used for this purpose. The tip of the thermocouple was adjusted in such a way that the initial thermo-emf is 20 - 22 mv. The recording ЭПП-09 (EPP-09) potentiometer had a measuring range of 0 - 5 mv. Therefore, the emf was partially compensated with a УПН (PP) laboratory potentiometer or УПН-250 (IRN - 250) apparatus. It takes one hour to establish equilibrium in the entire apparatus after which time the zero-indication was almost stable. Calibration with mixtures of known composition showed that the surface of the chromatographic peak is proportional to the content of the respective

Card 2/7

The Application of Gas- and Liquid
Chromatography to Analyze Mixtures
of Some Hydrocarbons

S/062/60/000/007/008/017/XX
B004/B064

component. The following analyses were made, the respective chromatograms being depicted: detection of 1% isoprene in 2,3-dimethyl butadiene; detection of 2% dimethyl butadiene in isoprene; detection of 0.5% tetramethyl ethylene in 2,3-dimethyl butane; quantitative analysis of the catalyzate of asymmetrical methyl isopropyl ethylene; separation of 2,2- and 2,3-dimethyl butane; separation of ethyl ether, acetone and ketones; separation of pentane, hexene, hexane and benzene; separation of 2-methyl cyclopentadiene-1,3 from 1-methyl cyclopentene-1; separation of benzene, cyclohexane, cyclohexene, and cyclohexadiene. Mixtures containing methanol, ethanol, acetals, and orthoformates cannot be analyzed with the apparatus. The authors state, however, that their method allows to solve a number of problems which arise in the analysis of liquid mixtures from homologs of ethylene and divinyl, as well as of several dienes. There are 9 figures and 10 references: 4 Soviet, 1 US, 3 British, 1 Dutch, and 1 German.

Card 3/7

The Application of Gas- and Liquid
Chromatography to Analyze Mixtures
of Some Hydrocarbons

S/062/60/000/007/008/017/XX
B004/B064

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy
of the Academy of Sciences, USSR) ✓

SUBMITTED: January 26, 1959 (initially)
April 23, 1960 (after revision)

Card 4/7

S/062/60/000/007/008/017/XX
B004/B064



Fig: 3

Fig. 3

Card 6/7

S/062/60/000/007/008/017/XX
B004/B064

Legend to Fig. 2: dosing evaporator a) winding 176 nichrome 0.1
without insulation b) glass

Fig. 3: burner 1 - gas pipe 2 - tube of the thermocouple,
3 - protecting tube, 4 - tip of the thermocouple.

✓
—

Card 7/7

S/062/60/000/008/029/033/XX
D013/B055

AUTHORS: ~~Kuchanov, V. F.~~ Kovalev, B. G., Nazarova, I. I., and
Yanovskaya, L. A.

TITLE: Application of the Wittig Reaction for the Synthesis of
 α, β -Unsaturated- and Polyene Acids

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 8, pp. 1512-1514

TEXT: This is a short communication on the investigation of the reaction of carboethoxymethylene triphenyl phosphorane (I) with various aldehydes. This investigation was undertaken with the purpose of synthesizing different polyene acids. It was found that (I) reacts readily with saturated, unsaturated, aromatic and heterocyclic aldehydes giving the corresponding ethyl esters of α, β -unsaturated acids in high yields. Particularly good results were obtained with polyenals, polyene acid esters being formed in yields of over 80%. By hydrolysis of these esters with sodium hydroxide in aqueous methanol, the polyene acids, up to now difficultly accessible substances, were obtained in satisfactory yields. Owing to the simplicity of execution, general applicability, high yields and purity of reaction

Card 1/2

✓

Application of the Wittig Reaction for the
Synthesis of α,β -Unsaturated- and Polyene
Acids

S/062/60/000/008/029/033/XX
B013/B055

products, the Wittig reaction surpasses many of the better-known preparation methods. It is undoubtedly one of the most convenient methods to prepare polyene acids and their esters. There are 1 table and 10 references: 1 Soviet, 1 US, 2 French, 5 German, and 2 Swiss. ✓

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: January 15, 1960

Card 2/2

3/062/60/000/010/021/031/XX
B002/B060

AUTHORS: Kucherov, V. F., Andreyev, V. M., and Lysanchuk, L. K.

TITLE: Study in the Field of Stereochemistry of Cyclic Compounds.
Report 33. Stereochemistry and Some Conversions of the
Adduct of 1-Vinyl-6-methoxy-3,4-dihydronaphthalene With
Maleic Anhydride

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 10, pp. 1796-1803

TEXT: The adduct (II) of 1-vinyl-6-methoxy-3,4-dihydronaphthalene (I) with maleic anhydride, the corresponding acid (III), and the diester (IV) have a cis-syn-configuration. The compounds of this series are readily converted by the action of hydrogen chloride into the corresponding isomers (V), (VI), (VII) which contain the double bond between the rings. Catalytic hydrogenation of the two series of isomers was investigated, and the resulting products (VIII) and (IX) were found to have cis-syn-cis-configuration. The diesters (IV) and (VI) were isomerized with sodium methylate, and the

Card 1/5

Study in the Field of Stereochemistry of Cyclic S/062/60/000/010/021/031/XX
Compounds. Report 33. Stereochemistry and Some BOO2/BO60
Conversions of the Adduct of 1-Vinyl-6-methoxy-
3,4-dihydronaphthalene With Maleic Anhydride

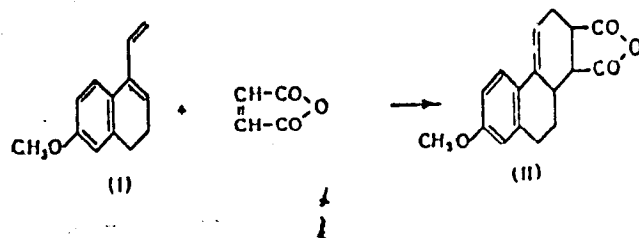
corresponding trans-acids (X) and (XIII) were obtained. There are 10
references: 5 Soviet, 3 US, 1 German, and 1 Swiss.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy
of the Academy of Sciences USSR) ✓

SUBMITTED: May 13, 1959

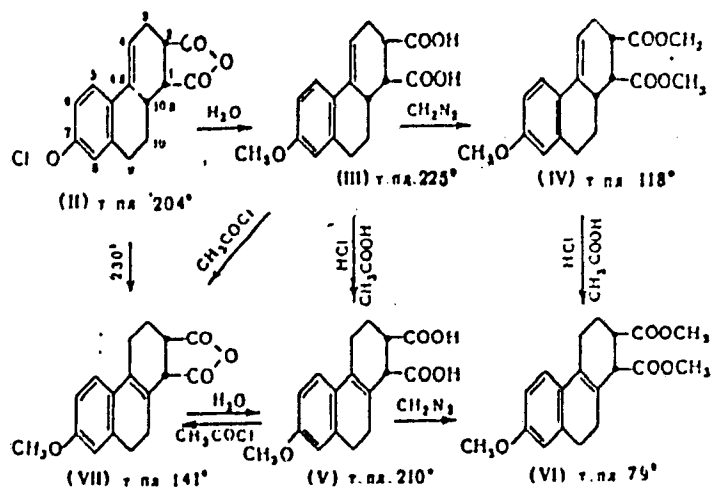
Card 2/5

S/062/60/000/010/021/031/XX
B002/2060



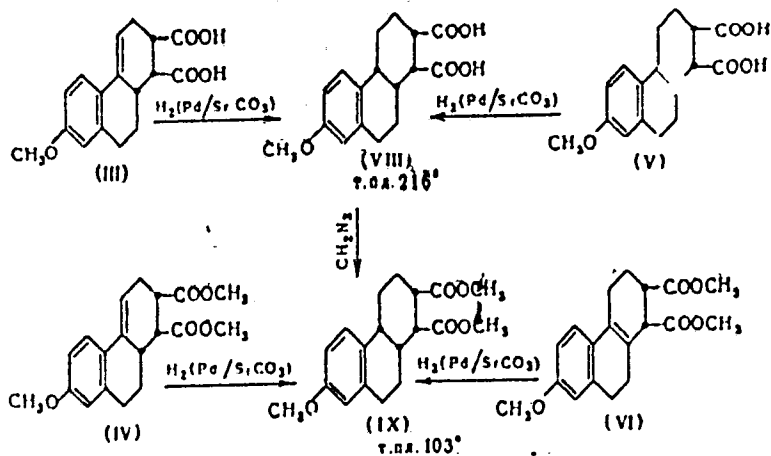
Card 3/5

S/062/60/000/010/021/031/XX
3002/3060



Card 4/5

S/062/60/000/010/021/031/XX
B002/2060



Carl 5/5

S/062/60/000/010/022/031/XX
B002/B060

AUTHORS: Andreyev, V. M., Lysanchuk, L. K., ~~Kucherov, V. F.~~
TITLE: Study in the Field of Stereochemistry of Cyclic Compounds.
Report 34. Conversion of Semiesters of Tricyclic Dicarboxylic
Acids, and Configuration of Cis-syn-7-methoxy-1,2,3,9,10,10a-
hexahydrophenanthrene-1,2-dicarboxylic Acid

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 10, pp. 1804-1809 ✓

TEXT: The authors attempted to prove that in cis-syn diester (I) the carbo-
methoxyl group is axial at C₁, and for this purpose they studied the iso-
merization of the corresponding acid esters with the carbomethoxyl group
at C₁ or C₂. Acid ester (III) was prepared by action of sodium methylate
upon the cis-syn anhydride, acid ester (IV) by partial saponification of
cis-syn diester (I). On treatment with diazo methane, (III) and (IV) again
gave the initial substance (I). The configuration of semiesters (III)
and (IV) was proved by performing their hydrogenation to the saturated
dard 1/6

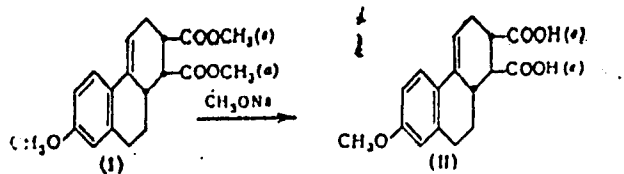
Study in the Field of Stereochemistry of Cyclic S/062/60/000/010/022/031/XX
Compounds. Report 34. Conversion of Semiesters B002/B060
of Tricyclic Dicarboxylic Acids, and Configuration
of Cis-syn-7-methoxy-1,2,3,9,10,10a-
hexahydrophenanthrene-1,2-dicarboxylic Acid

semiesters (VI) and (VII). Semiester (VI) was decomposed over the acid chloride (VIII) and thioester (IX) to (X) by desulfurization and reduction, to γ -lactone (XI) by cyclization, and to 1-methyl-7-methoxy phenanthrene by dehydrogenation. The structure of (IV) also came about in this way. (III) yields the cis-syn acid (XIII) on treatment with sodium methylate, (IV) the trans-anti acid (II). The behavior of cis-syn-7-methoxy-1,2,3,9,10,10a-hexahydrophenanthrene-1,2-dicarboxylic acid can be understood when basing upon these investigations. This compound was found in forms A and B; A is able to isomerize on the carboxyl group C₁ to form the trans-anti acid (II). In contrast therewith, form A is not able to isomerize on the carboxyl group at C₂. As only semiester (IV) is able to isomerize with the carbomethoxyl group at C₁, acid (XIII) is chiefly found in conversion form A, which, from the energetic viewpoint, is of greater advantage. There are 8 references: 2 Soviet, 4 Swiss, 3 US, and 2 British.

Card 2/6

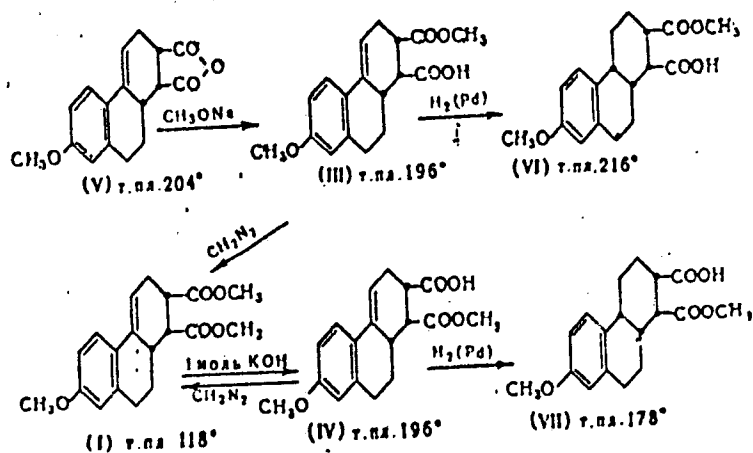
In the Field of Stereochemistry of Cyclic 3/062/60/000/010/022/031/XX
 No. Report 24. Conversion of Semiesters 3002/3060
 Cyclic Dicarboxylic Acids, and Configuration
 1,2,3,9,10,10a-
 10a-hydro-phenanthrene-1,2-dicarboxylic Acid

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
 nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy
 of the Academy of Sciences USSR)
 SUBMITTED: May 13, 1959



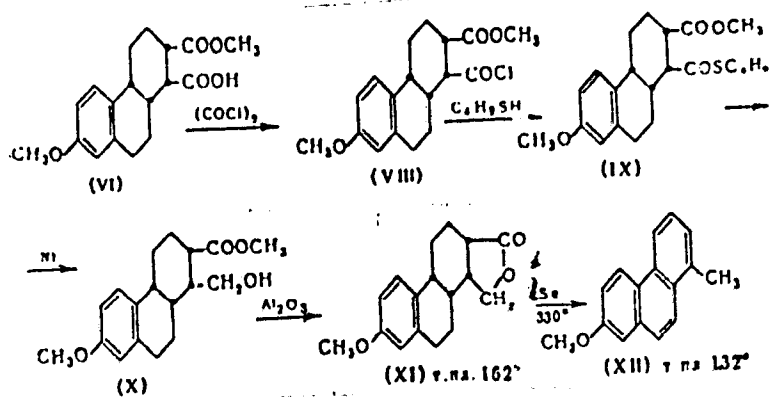
Page 3/6

S/062/00/000/010/022/031/XX
2002/2060



Card 4/6

S/062/60/000/010/022/031/XX
3002/2060



Card 5/6

3/062/60/000/010/022/031/X:
0002/0060

Все полученные фенантеновые производные по температурам плавления совпадают с соответствующими производными 1-метилфенантрена [6—8], и это совершенно однозначно подтверждает, что в исходном предельном цис-син-цис-полуэфире (VI), а следовательно и в цис-син-полуэфире (III), имеется свободная карбоксильная группа при C_1 . Как было показано выше, второй цис-син-полуэфир (IV) является только структурным изомером полуэфира (III) и, следовательно, имеет свободную карбоксильную группу при C_2 .

Card 6/6

KUCHEROV, V.F.; LYSANCHUK, L.K.; ANDRIYEV, V.M.

Stereochemistry of cyclic compounds. Report No.35: Synthesis and configuration of the isomers of 7-methoxy-1,2,3,4,4a,9,10,10a-octahydro-1,2-phenanthrenedicarboxylic acid having cis-linked rings. Izv. AN SSSR.Otd. khim. nauk no.11:2003-2008 (MIRA 13:11)
N '60.

1. Institut organicheskoy khimii im.N.D.Zelinskogo AN SSSR.
(Phenanthrenedicarboxylic acid)

YANOVSKAYA, L.A. ; KUCHEROV, V.F.

Chemistry of acetals. Report No. 3: Reactions of tetraethyl acetals of malonic and methylmalonic dialdehydes with vinyl ethyl and propenyl ether. Izv. AN SSSR, Otd. Khim. nauk no. 12: 2184-2192 D '60. (MIRA 13:12)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Acetals) (Ethers)

SMIT, V.A.; SEMENOVSKIY, A.V.; KUCHEROV, V.F.

Regularities and the cyclization mechanism of isoprenoids.
Report No. 2: Cyclization of cis- and trans-geranylacetones.
Izv. AN SSSR. Otd. khim. nauk no. 12: 2193-2200 D '60. (MIRA 13:12)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Undecadienone) (Cyclization)

KRASNAYA, Zh.A.; KUCHEROV, V.F.

Condensation of 1-alkoxydienes with aldehydes. New method for synthesizing α, β -unsaturated alkoxy aldehydes and polyenals. Zhur. ob. khim. 30 no.12:3918-3926 D '60. (MIRA 13:12)

1. Institut organicheskoy khimii Akademii nauk SSSR.
(Aldehydes) (Olefins)

5.3400

69997

AUTHORS: Kucherov, V.F., Ivanova, L.N.S/020/60/131/05/026/069
B011/B117TITLE: An Investigation in the Field of Cyclic Compounds.
Cyclopentenedione-1,3 in the Reactions of Diene Synthesis

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1077-1079 (USSR)

TEXT: Cyclopentenedione-1,3 can be used in organic synthesis among other things as a dienophilic agent to effect condensation of dienes. This unsaturated cyclic β -ketone is a closed-chain analog of maleic anhydride and can be used to build polycyclic systems with a five-membered ring in which the carbonyl group occupies an α -position with respect to the connection point of the rings. This is very important both for the synthesis of steroid-like compounds and for the study of the stereochemistry of hydrindandione systems. Cyclopentenedione-1,3 is obtained from cyclopentadiene which easily forms a dibromide (II). (II) is then converted to the diacetate (III) and subsequently to a mixture of cyclopentenediol isomers (IV) (Ref 2). These diols are most advantageously oxidized with cyclopentenedione-1,3 using chromium trioxide in acetic acid. Thus, a sufficiently pure (melting point 35-36°) diketone can be obtained with a yield of up to 30%. (I) easily reacts with butadiene in diene synthesis at room temperature to give the corresponding cis-adduct (V). The structure and configuration of (V) were

Card 1/3

69997

An Investigation in the Field of Cyclic Compounds.
Cyclopentenedione-1,3 in the Reactions of Diene
Synthesis

S/020/60/131/05/026/069
B011/B117

confirmed by oxidizing the corresponding hydrindandione-1,3 (VI) to the known cis-cyclohexane-1,2-dicarboxylic acid. The condensation of the diketone with isoprene proceeds in an analogous way, with the formation of the adduct (VII). With cyclopentadiene, (VIII) is formed in a similar way. (VIII) adds 1 mole of hydrogen on hydrogenation in the presence of a Pd catalyst, and yields the corresponding endo-methylene hydrandione-1,3 (IX). According to infrared spectra, adducts formed in the solution are completely enolized (in accordance with reference 6). (I) can be easily condensed with 1-vinyl- Δ^1 -cyclohexanone as well as with 6-methoxy-1-vinyl- $\Delta^{3,4}$ -dihydro naphthalene. Thereby, tri- and tetracyclic diketones (X) and (XI) are formed with high yields. (XI) has a steroid-like structure which is very interesting for further study. Work with the adducts is continued. There are 6 references, 1 of which is Soviet. 4

ASSOCIATION: Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N.D. Zelinskiy of the Academy
of Sciences, USSR)

Card 2/3

An Investigation in the Field of Cyclic Compounds.
Cyclopentenedione-1,3 in the Reactions of Diene
Synthesis

^{69:97}
S/020/60/131/05/026/069
B011/B117

PRESENTED: December 19, 1959, by M. M. Shemyakin, Academician

SUBMITTED: December 1, 1959

Card 3/3

SEMINOVSKIY, A.V.; SMIT, V.A.; KUCHEROV, V.P.

Mechanism of the cyclisation of pseudoionone. Dokl. AN SSSR 132
no.5:1107-1110 Je '60. (MIRA 13:6)

1. Institut organicheskoy khimii im. N.D.Zelinskogo Akademii
nauk SSSR. Predstavleno akademikom B.A.Kazanskim.
(Pseudoionone) (Cyclisation)

KUCHEROV, V.F.

5.3831
5.3400
AUTHORS:

TITLE:

81861
S/020/60/133/02/331
B016/B060
KucheroV, V. F., Yanovskaya, L. A., Kovalev, B. G.
Saponification of Tetraethyl Acetals of the β -Dicarbonyl Com-
pounds and Some Ways of Utilizing the Compounds Formed
Thereby

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 2,
pp. 370-373

TEXT: The saponification of tetraethyl acetals (I) with an equivalent
of water in the presence of p-toluene sulfonic acid was found to be a
general method of synthesizing the β -formyl-vinyl ethers (Ref. 3). The
further saponification of the latter leads to the substituted derivatives
of malonic acid dialdehyde (III) (in accordance with Ref. 4). IR spectra
of the β -formyl-vinyl ethers produced by the authors confirm their
structure as α,β -unsaturated aldehydes. However, they contain a slight
admixture of saturated aldehydes. On the saponification of tetraethyl
acetals of β -ethoxy glutaric dialdehyde (IV) with an equivalent amount
of water there is a cyclization, with 2,4,6-triethoxy tetrahydropyran

APPROVED FOR RELEASE: 06/19/2000

CIA

Card 1/3

81861
S/020/60/133/02/33/068
B016/B060

Tetraethyl Acetals of the
Compounds and Some Ways of
Compounds Formed Thereby

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-

(1) they
cyclohex-
(XVI) with a 60-
yield unsaturated alu-
here open up great pos-
compounds which are related to the
subject of further studies made by
2 Soviet, 1 German, and 1 Swiss.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D.
Zelinskogo of the Academy of Sciences, USSR)

PRESENTED:
SUBMITTED:

January 16, 1960, by M. M. Shemyakin, Academician
January 7, 1960

Card 2/3

ne

81861
S/020/60/133/02/33/068
B016/B060

lene triphenyl phosphorane. Still,
sis reaction with the lithium
acetylene alcohols of the type
on and dehydration of the latter
all of the conversions of the
the synthesis of several polyene
ones. This constitutes the
the authors. There are 5 references.

apomorphic. Compounds as the main products. Here as well, the IR spectra confir-
structure. As the authors had proved earlier (Ref. 2), only corre-
saponification of tetraethyl acetal (VI) with an excess of water. The
tetraethyl acetals of the type (VI) result on the saponification of ethoxy
derivatives (VIII) with a water equivalent of acetoacetic aldehyde and its
much as easily diethyl acetal of the type (IX) are formed here. All of
the compounds formed in this connection do not yield any Fehling reac-
tion, and the IR spectrum shows that they possess a free keto group. The
dialdehydes of the type (III) and (VII) were found to react readily
under the conditions of the Wittig reaction with carbethoxy methylene
triphenyl phosphorane (X). In this connection they form corresponding
diethyl esters of the unsaturated dicarboxylic acids (XI) and (XII).
Also several β -formyl vinyl ethers are capable of undergoing this
reaction. Thus, β -formyl- β -methyl vinyl ether reacts with
with phosphorane (X). The product, 2,4-dinitro phenyl hydrazone of the
corresponding aldehyde ester (XV) was obtained in turn. β -Keto acetals

UH

UH

KUCHEROV, V.F.; SHVETSOV, N.I.

Stereochemistry of heterocyclic compounds. Report No.2: Geometrical isomers of 1-cyclohexyl- (and 1-phenyl)-2,5-dimethyl-4-phenyl-4-piperidinols. Izv. AN SSSR. Otd. khim. nauk no.2:287-291 F '61 (MIRA 14:2)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Piperidinol)

MISTRYUKOV, E.A.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.4: Esterification
and space configuration of some 4-phenyl-4-piperidinols. Izv. AN SSSR
Otd.khim.nauk no.4:627-632 Ap '61. (MIRA 14:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Piperidinol)

KUCHEROV, V.F.; NIKOLAYEV, G.M.

Synthesis and conversions of unsaturated carboxylic acids. Report No.2;
New method for the synthesis of unsaturated γ -keto acids. Izv. AN SSSR
Otd.khim.nauk no.4:632-637 Ap '61. (MIRA 14:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acids, Organic)

SHVETSOV, N.I.; UNKOVSKIY, B.V.; MOKHIR, I.A.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.5: Possible configuration of 1, 2, 5-trimethyl-4-ethynyl-4-piperidinol stereoisomers and their transformation products. Izv.AN SSSR.Otd.khim.nauk no.5: 843-849 My '61. (MIRA 14:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR i
Institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova.
(Piperidinol)

MISTRYUKOV, E.A.; ARONOVA, N.I.; KUCHEROV, V.F.

New method for synthesizing N-alkyl-4-piperidones. *Izv. AN SSSR. Otd. khim. nauk* no.5:932-933 My '61. (MIRA 14:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Piperidone)

KUCHEROV, V.F.; SEREBRYAKOV, E.P.

Stereochemistry of cyclic compounds. Report 39: Synthesis and stereospecific transformations of monoesters of cis-syn and cis-anti- Δ^8 hydrindene-4, 5-dicarboxylic acids. Izv.AN SSSR, Otd.khim. nauk no.6:1087-1093 Je '61. (MIRA 14:6)

1. Institut organicheskoy khimii im. ND.Zelinskogo AN SSSR.
(Indandicarboxylic acid)

KUCHEROV, V.F.; GURVICH, I.A.

Use of trans-1-vinyl-6-acetoxy- and trans-1-vinyl-6-ethylenedioxy-9-methyl- Δ^1 -octalines in diene synthesis reactions. Izv. AN SSSR, Otd. khim. nauk no. 6: 1152-1153 Je '61. (MIRA 14:6)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Naphthalene) (Unsaturated compounds)

KRASNAYA, Zh.A.; KUCHEROV, I.P.

New path ' the synthesis of vitamin A. Izv.AN SSSR, Otd.khim.nauk
no.6:116 7 Je '61. (MIRA 14:6)

1. Instit anicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Vitamins--A)

MISTRYUKOV, E.A.; KUCHEROV, V.F.

Schotten-Baumann inverse reaction and stereochemistry of
decahydroquinoline and its derivatives. Izv. AN SSSR. Otd.
khim.nauk no.7:1345-1346 J1 '61. (MIRA 14:7)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Quinoline)

ANDREYEV, V.M.; SEGAL', G.M.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.41: Synthesis of geometric isomers of 7-methoxyhexahydro (and octahydro) phenanthrene-1,2-dicarboxylic acids. Izv. AN SSSR. Otd.khim. nauk no.8:1475-1482 Ag '61. (MIRA 14:8)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR. (Phenanthrenedicarboxylic acid)

YUFIT, S.S.; KUCHEROV, V.F.

Structure of a trimer of acrolein diethylacetal. Izv. AN
SSSR. Otd.khim.nauk no.8:1522-1524 Ag '61. (MIRA 14:8)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN
SSSR.

(Acrolein)

ANDREYEV, V.M.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.42: Synthesis and catalytic hydrogenation of 7-methoxy-1,2-bis-hydroxymethylhexahydrophenanthrenes. Izv. AN SSSR. Otd.khim.nauk no.9:1636-1640 S '61. (MIRA 14:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Phenanthrene)

YUFIT, S.S.; KUCHEROV, V.F.

Chemistry of acetals. Report No.6: Dimerization of acetals of α,β -unsaturated aldehydes. Izv. AN SSSR. Otd.khim.nauk (MIRA 14:9)
no.9:1646-1649 S '61.

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acetals)

YANOVSKAYA, L.A.; KUCHEROV, V.F.

Chemistry of acetals. Report No.7: Polarographic study of some products of the hydrolysis of tetraethylacetals of malonic and p-ethoxyglutaric dialdehydes. Izv. AN SSSR. Otd.khim.nauk (MIRA 14:9) no.9:1650-1657 5 '61.

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Malonaldehyde) (Glutaraldehyde)

MISTRYUKOV, E.A.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.7: Spacial structure of derivatives of decahydro-4-quinolone and configuration of isomeric decahydroquinolines. Izv.AN SSSR.Otd.khim.nauk (MIRA 14:10)
no.10:1816-1825 0 '61.

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Quinolone) (Quinoline) (Stereochemistry)

MISTRYUKOV, E.A.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.8:
Reaction of debenzoylation and stereochemistry of decahydro-
quinoline and its derivatives. Izv.AN SSSR.Otd.khim.nauk
no.10:1826-1829 0 '61. (MIRA 14:10)

1. Institut organicheskoy khimii im. Zelinskogo AN SSSR.
(Quinoline) (Stereochemistry)

YANOVSKAYA, L.A.; KUCHEROV, V.F.

Chemistry of acetals. Report No.8: Grignard reaction with tetraethylacetal of malonic dialdehyde, 1, 1, 3, 5, 7, 7-hexaethoxyheptane, and 1, 1, 3, 5, 7, 9, 9-heptaethoxynonane. Izv.AN SSSR.Org.khim.nauk no.10:1830-1834 0 '61. (MIRA 14:10)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acetal) (Grignard reagents)

MISTRYUKOV, E.A.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.9: Synthesis of isomeric decahydro-4-quinolol o-acetates and study of the possibility for $O \rightarrow N$ -acyl migration in the series of decahydro-quinoline. Izv.AN SSSR.Otd.khim.nauk no.11:2044-2050 N '61.
(MIRA 14:11)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Hydroquinone) (Quinoline) (Stereochemistry)

YUFIT, S.S.; KUCHEROV, V.F.

Chemistry of acetals. Report No.9: Mechanism of acrolein acetal
trimerization. Izv. AN SSSR Otd.khim.nauk no.1212183-2184 D
'61. (MIRA 14:11)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acrolein) (Polymerization)

KUCHEROV, V.F.; GRIGOR'YEVA, N.Ya.

Conjugation factors in cyclic systems. Part 1: Character of
the isomerization of the double bonds in monosubstituted
cyclohexadiene-1,2-dicarboxylic acids. Zhur. ob. khim. 31
no. 2:447-457 F '61. (MIRA 14:2)

1. Institut organicheskoy khimii AN SSSR.
(Cyclohexadienedicarboxylic acid) (Chemical bonds)

KUCHEROV, V.F.; GRIGOR'YEVA, N.Ya.; ZEMSKOVA, I.I.

Conjugation factors in cyclic systems. Part 2: Isomerization of double bonds in dimethyl- $\Delta^{1,4}$ -cyclohexadiene-1,2-dicarboxylic acids. Zhur. ob. khim. 31 no. 2:457-469 F '61. (P-A 14:2)

1. Institut organicheskoy khimii AN SSSR.
(Cyclohexadienedicarboxylic acid) (Chemical bonds)

KUCHEROV, V.F.; GURVICH, I.A.

Stereochemistry of cyclic compounds. Part 37: Synthesis of 5,9-dimethyl- Δ^5 1,6 -diketooctalin and configuration of its reduction products. *Zhur. ob. khim.* 31 no.3:796-804 Mr '61.

(MIRA 14:3)

1. Institut organicheskoy khimii imeni N. D. Zelinskogo AN SSSR.

(Naphthalenedione)

GURVICH, I.A.; KUCHEROV, V.F.; ILYUKHINA, T. V.

Stereochemistry of cyclic compounds. Part 38: Stereochemistry of reduction of 5,9-dimethyl-1-ethynyl-1-hydroxy- Δ^5 -6-octalone and its derivatives. Zhur. ob. khim. 31 no.3:804-810 Mr'61.

(MIRA 14:3)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN SSSR.
(Naphthalenone)

KUCHEROV, V.F.; MIL'SHTEYN, I.M.; GURVICH, I.A.

Stereochemistry of cyclic compounds. Part 40: Stereochemistry of diene condensation of trans-1-vinyl-6-keto-9-methyl- Δ^8 -octalin with maleic anhydride, and some transformations of formed isomers and their ketals. Zhur.ob.khim. 31 no.9:2832-2839 S '61.

(MIRA 14:9)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Cyclic compounds) (Stereochemistry)

KUCHEROV, V.F.; GRIGOR'YEVA, N.Ya.; FADEYEVA, T.M.

Conjugation factors in cyclic systems. Part 3: Some spectral regularities in the series of isomeric cyclohexadiene-1,2-dicarboxylic acids and their derivatives. Zhur.ob.khim. 31 no.9:2894-2898 S '61. (MIRA 14:9)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo.
(Cyclohexadienedicarboxylic acid--Spectra)

GURVICH, I.A.; MIL'SHTEYN, I.M.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Part 43: Stereochemistry of the Diels-Alder condensation of trans-1-vinyl-6-acetoxy-9-methyl-1-octalin with maleic anhydride, and some transformations of dicarboxylic acids of the phenanthrene series. Zhur.ob.khim. 31 no.12:3939-3945 D '61. (MIRA 15:2)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Naphthalene)
(Maleic anhydride)
(Phenanthrenedicarboxylic acid)
(Stereochemistry)

KUCHEROV, V.F.; KOVALEV, B.G.; KOGAN, G.A.; YANOVSKAYA, L.A.

Synthesis and geometric configuration of diethyl esters of 2, 4, 6, 8, 10-dodecapentaene-1, 12-dioic and 2, 4, 6, 8, 10, 12, 14-hexadecaheptaene-1, 16-dioic acids. Dokl. AN SSSR 138 no.5:1115-1117 Je '61. (MIRA 14:6)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
Predstavleno akademikom B.A. Kazanskim.
(Dodecapentaenedioic acid) (Hexadecaheptaenedioic acid)

KUCHEROV, V.F.; SEREBRYAKOV, E.P.; VALTER, R.E.

Study of the structural and steric directivity of the diene
condensation of 1-vinylcyclopentene with methyl acrylate. Dokl.
AN SSSR 138 no.6:1357-1360 Je '61. (MIRA 14:6)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
Predstavleno akademikom B.A.Kazanskim.
(Cyclopentene) (Acrylic acid) (Condensation products (Chemistry))

VENTER, K.K.; GILLER, S.A., akademik; KUCHEROV, V.F.; TSIRULE, V.V.
[Cirule, V.]; KARKLINYA, A.M. [Karklina, A.]

Syntheses in the domain of 5-nitrofuryl-2-polyalkenals and 5-nitrofuryl-2-polyalkenones. Reaction of carbethoxymethylene-triphenylphosphorane and acetylmethylene-triphenylphosphorane with ~~4~~ unsaturated and polyene aldehydes of the 5-nitrofuran series. Dokl. AN SSSR 140 no.5:1073-1075 0 '61.

(MIRA 15:2)

1. Institut organicheskogo sinteza AN Latvyskoy SSR.
2. AN Latvyskoy SSR (for Giller).
 - (Phosphorane)
 - (Furan)
 - (Aldehydes)

Kuchero, R.Ya.

57-9-31/40

AUTHOR: Kuchero, R.Ya.

TITLE: Diffusional Sliding and Convective Diffusion of Gas in Capillaries
(Diffuzionnoye skol'zheniye i konvektivnaya diffuziya gaza v kapillyarakh)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 9, pp. 2158 - 2161 (USSR)

ABSTRACT: When describing the sliding effect on the boundary of a moving gas and a firm surface those effects are usually investigated which are in connection with the presence of such components of pressure- and temperature gradients as are tangential to the surface. Here a diffusion sliding, i.e. a sliding that is connected with the component of the concentration gradient which is tangential to the surface, and the influence exercised by this effect on convective gas diffusion in capillaries is investigated. A formula for the sliding velocity is derived. This is the generalization of the elementary derivation of this formula (E.H. Kennard, The Kinetic Theory of Gases, New York, 1938) for the case of the mixture of two gases which is heterogeneous with respect to concentration. From this formula it may be seen that the influence exercised by diffusion sliding in capillaries is all the greater, the greater is the molecule-mass difference

Card 1/2

57-9-31/40

Diffusional Sliding and Convective Diffusion of Gas in Capillaries

of the diffusing gases. This effect is able to play an essential part not only within the domain of the transition diffusion between molecular and Poiseuille's flow, but also in the case of ordinary diffusion in the case of small $\frac{dp}{dy}$. In the special

case it is found that with $\frac{dp}{dy} = 0$ that, in the case of diffu-

sion in a long capillary, the ratio of the flows of individual components is proportional to the roots of their molecular weights. There are 2 Slavic references.

SUBMITTED: March 25, 1957

AVAILABLE: Library of Congress

Card 2/2

PHASE I ISOTOPE EXPLOITATION 80V/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniya v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Mozhnuyu gamma-ustanovki. Radiometriya i dosimetriya. Trudy konferentsii... (Isotope Production. High-energy gamma-ray stations. Facilities. Radiometry and Dosimetry) Translations of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, Moscow, 1957. 233 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Prelov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Party Resp. Ed.), Agintsev, K.K., Alkseyev, B.A., Kochkarev, V.V., Loshchinsky, N.I., Malkov, T.F., Sinitsyn, V.I., and Popov, G.N. (Secretary); Tech. Ed.: Novichenko, P.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

Prelov, Yu.S., V.V. Kochkarev, and Ye.Ye. Kullab. Development of Isotope Production in the Soviet Union. Kullab. Development of Isotope Production in the Soviet Union. This report is a general survey of production methods, apparatus, raw materials, applications, investigations, and future prospects for radio isotopes in the Soviet Union.

Card 2/12

Alkseyevskiy, N.Ye.; A.V. Dubrov, O.I. Kosurov, O.P. Prudovskiy, S.I. Pilyonov, V.I. Chekin, V.M. Shelyapin (deceased), and T.K. Shvalova. Utilization of Mass Spectrometry with a Homogeneous Field for Analyzing Isotopes of Light Elements 73

Ordzhonikidze, K.O. and O.M. Zubarev. Relative Propagability of Palladium and Germanium Isotopes 78

Rosen, A.M. Some Problems on the Theory of Isotope Separation 86

Oversteteli, I.O. and V.K. Tikhomirova. Separation of Isotopes of Light Elements by Diffusion in Vapors 113

Barvish, O.F., and E.Ye. Kucheryov. A Diffusion Column for Separating Isotopes 122

Card 3/12

GVERDISZITELI, I. G., KUCHEROV, R. Y., and SECHAKAYA, V. K.

"Isotope Separation by Diffusion in a Steam Stream."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 1958,

KneHEROV, R.YA.

PLATE 1. BOOK EXPLANATION 00/213
International Conference on the Peaceful Use of Atomic Energy. 2nd.
Geneva, 1958

Library comprehensive bibliography: polychrome 1 preliminary isotope (Reports
of Soviet Scientists); Production and Application of Isotopes (Moscow,
Atomizdat, 1959. 500 p. (Series: 111: Treaty, vol. 6) 6,000 copies
printed.

Ms. (Title page): G.V. Kurlyumov, Academician, and I.I. Pavlov, Correspond-
ing Member, USSR Academy of Sciences; Ed. (Title page): L.D. Andreyenko;
Tech. Ed.: L.D. Andreyenko.

REMARKS: This book is intended for scientists, engineers, physicists, and
biologists engaged in the production and application of atomic energy to
peaceful ends. It is for professors and graduate and undergraduate students of
higher technical schools where nuclear science is taught; and for the
general public interested in atomic science and technology.

CONTENTS: This is volume 6 of a 6-volume set of reports delivered by Soviet
scientists at the Second International Conference on the Peaceful Use of
Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 con-
tains 32 reports on: 1) modern methods for the production of stable radio-
active isotopes and their labeled compounds, 2) research results obtained
with the aid of isotopes in the field of chemistry, metallurgy, medicine,
biology, and agriculture, and 3) desimetry of ionizing radiation. Volume
6 was edited by: G.V. Kurlyumov, Academician, and I.I. Pavlov, Correspond-
ing Member, USSR Academy of Sciences; and L.D. Andreyenko, Candidate of
Medical Sciences. See 00/213 for titles of volumes of the set. Refer-
ences appear at the end of the articles.

1. Tabery, G.H., and V.J. Deber. Some of Desimetry Isotopes Control Methods
in the Radiochemical Laboratories of the AEC (Report No. 5056)

2. Haller, M.P., A.G. Sel'brein, A.S. Prudom, and I.S. Smolov. Compara-
tial Production of Desimetry by the Low-Temperature Distillation Method
(Report No. 5055)

3. Gerasimov, I.G., R.Ya. KneHEROV, and V.A. Tikhonova. Separation of
Isotopes by Diffusion in a Steam Film (Report No. 5056)

4. Salomov, V.S., A.I. El'ia, and Ye.O. Kozlov. Separation of Isotopes
on Electromagnetic Units in the Soviet Union (Report No. 5055)

5. Alakozov, R.A., G.V. Malygin, V.S. Zolotarev, B.V. Pavlov, Ye.O.
Chernov, and G.V. Shchegolev. Separation of Isotopes of Rare-
earth Elements by the Electromagnetic Method (Report No. 5057)

6. Muravov, P.M., R.H. Babov, R.S. Ioffe, B.O. Breshnev, and G.M. Prudina.
The Source for the Separation of Stable Isotopes (Report No. 5055)

7. Salis, M.V., and P.M. Muravov. Electric Field Effect in Ion Beams on
Stable Isotope Separation by the Electromagnetic Method (Report No.
5056)

8. Bogdanov, B.O., P.L. Gaida, G.I. Yermolov, and I.D. Khvalinskiy.
Use of Radioactive Isotopes in Metallurgical Research (Report No. 5055)

9. Shchegolev, B.S., V.A. Yemshikov, and I.S. Smolov. The Theory and
Practice of Isotope-type Instruments Based on Radioactive Isotopes
(Report No. 5058)

10. Zolotarev, V.S., G.I. Shur, and R.H. Babov. Studying the
Mechanism of Protection of Mating Surfaces Against Wear Due to Corro-
sion (Report No. 5159)

11. Muravov, P.M., and L.S. Mityayev. The 74170, No. 155, and Co¹⁴⁴ as
Sources of Radiation for Creating Thin-walled Products (Report No. 5055)

12. Bab, B.I., A.S. Zerkov, and G.I. Kopylov. Studying the Radiative-
tion of Elements in Metallurgical and Chemical Industry by Autoradiography
and Radiometric Methods (Report No. 5056)

13. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

14. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

15. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

16. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

17. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

18. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

19. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

20. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

21. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

22. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

23. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

24. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

25. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

26. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

27. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

28. Gaida, P.L., A.I. Yermolov, V.A. Yemshikov, G.O. Babov, and
I.S. Smolov. Studying the Structure and Distribution of Elements in
Alloys of 215-atom and 216-atom from the Radioactive Isotope Method
(Report No. 5056)

21(5)

AUTHORS: Kuchеров, R. Ya., Tevzadze, G. A.

SOV/89-6-2-16/28

TITLE: Separation Cascades Consisting of Diffusion Columns (Razdelitel'nyy kaskad iz diffuzionnykh kolonok)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 2, pp 207 - 208 (USSR)

ABSTRACT: At the All-Union Scientific and Technical Conference on the Application of Radioactive and Stable Isotopes G. P. Barvikh and R. Ya. Kuchеров reported on a laboratory separation plant consisting of 10 diffusion columns. Neon, argon and carbon isotopes were separated by means of that diffusion plant. The gas flow in the plant is obtained by the hydrodynamic pressure drop at the diaphragms. The passing gas quantity is measured by means of a capillary gas-flow counter. The diaphragms in these 10 columns have a total surface of 1.25 m^2 , each column is 1 m long. The cascade requires electric energy of 7-8 kw. Xylene is used as working liquid. The cascade operates at a pressure of 100 - 300 mm Hg. At a pressure of 280 mm Hg stationary equilibrium is attained in the separation of neon isotopes after 60 hours approximately. The results obtained are given in the following table:

Card 1/2

Separation Cascades Consisting of Diffusion Columns

SOV/89-6-2-16/28

Gas to be Separated	Isotope	Number of Cascades	Gas Consumption n.cm ³ /24h	Initial Concentration in %	Concentration of the Separated Iso- tope in %
Neon	N ²²	10	400	9.2	99
Argon	Ar ³⁶	9	175	0.31	14
Methane	C ¹³	9	500	1.1	12

There are 1 figure and 1 table.

SUBMITTED: September 17, 1958

Card 2/2